



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 0 845 700 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention
of the grant of the patent:
02.03.2005 Bulletin 2005/09

(51) Int Cl.7: **G03B 27/46**, G03B 27/73

(21) Application number: **97120843.4**

(22) Date of filing: **27.11.1997**

(54) **Method and system for storing picture image data for reprint**

Verfahren und System zum Speichern von Bilddaten zum Nachdrucken

Méthode et système de stockage de données d'images pour réimpressions

(84) Designated Contracting States:
DE ES FR GB IT NL SE

(30) Priority: **27.11.1996 JP 31670096**
12.03.1997 JP 5721797

(43) Date of publication of application:
03.06.1998 Bulletin 1998/23

(73) Proprietor: **Fuji Photo Film Co., Ltd.**
Kanagawa-ken (JP)

(72) Inventors:
• **Shiota, Kazuo**
Minato-ku, Tokyo (JP)
• **Ohtsuka, Shuichi**
Ashigarakami-gun, Kanagawa-ken (JP)

- **Nakajima, Nobuyoshi**
Ashigarakami-gun, Kanagawa-ken (JP)
- **Haneda, Norihisa**
Asaka-shi, Saitama-ken (JP)
- **Makishima, Sugio**
Asaka-shi, Saitama-ken (JP)
- **Tanaka, Hiroshi**
Asaka-shi, Saitama-ken (JP)

(74) Representative: **Klunker . Schmitt-Nilson . Hirsch**
Winzererstrasse 106
80797 München (DE)

(56) References cited:
EP-A- 0 601 364 **EP-A- 0 615 154**
EP-A- 0 727 693 **US-A- 4 251 156**
US-A- 4 951 086

EP 0 845 700 B1

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to a method and a system for storing picture image data for a reprint according to the preamble of each of claims 1, 2 and 3, and claims 5, 6 and 7.

Description of the Related Art

[0002] A photo finishing system has been known which obtains picture image data by reading a picture image recorded on a developed film by using a film scanner and outputs the picture image as a picture print after predetermined image processing has been carried out thereon.

[0003] For such a system, a method has been proposed whereby the picture image data which are actually output as a print after the image processing thereon are stored in a disc of a server computer installed in a DPE or a laboratory, or in a medium such as an MO disc or a ZIP disc, and a reprint of the picture image data is immediately generated by using the stored picture image data without carrying out rereading of the film or the image processing.

[0004] A film reading operation for reprints is generally inefficient compared with the case of first prints. This is because all frames recorded on a film are sequentially read in the case of first prints while only ordered frames should be selected and read in the case of reprints. Especially, when a 35 mm film is read, since the film is stored after being cut into pieces, setting the film or selecting a frame therein is time-consuming. Therefore, it is very advantageous in terms of operation efficiency if the picture image data stored in the manner described above can be used for a reprint.

[0005] The above method for storing the picture image data which have been printed is efficient when a reprint that is the same as the print which has been previously generated is generated, as in the case of an extra print. However, when a reprint under different conditions is requested, rereading of the film should be carried out, and the advantage described above cannot be obtained. Specific cases where reprints under different conditions are requested are explained below.

[0006] A first is the case where a reprint of a different area of a picture image is necessary. In general print generating processing, a print is output by reading an area which is slightly smaller than the area of the actual picture image so that a portion outside the picture image on a film is not printed as a black line at the edge of a picture. Especially, in a laboratory where production efficiency is emphasized, the area to be read is set to be rather smaller than the actual picture image area so that an error in film feeding or the like can be allowed to some

degree. Therefore, it can happen that a person who takes a position in a picture at an end of a group of people is not printed, although this is rare. In the conventional method, since only the picture image data representing the area having been printed are stored, film rereading should be carried out after adjusting the area to be read so that the person is printed.

[0007] Furthermore, a reprint may be requested, because areas in bright sunlight have come out too bright or washed out, or areas in shade or high density areas have come out too dark or become somewhat flat. In such a case, the picture image data having been stored are the image-processed data after a density control has been carried out thereon. Therefore, information regarding the density range of the area causing the problem has not been stored. In other words, the area causing the problem will never be reproduced as a portion of a print unless film rereading is carried out.

[0008] Moreover, a reprint at a different resolution may be requested. If a reprint at a resolution lower than the resolution of stored picture image data is requested, the number of pixels in the picture image data only has to be reduced. However, if a reprint at a higher resolution is requested, deterioration in picture quality to some extent cannot be avoided, even though interpolation processing or the like is carried out on the image data. Therefore, film rereading is necessary to obtain a high quality print.

[0009] In accordance with the preamble of each of claims 1 to 3 and 5 to 6 EP-A-0 601 364 discloses a method and a system for storing picture image data for a reprint.

[0010] No specific information is included in EP'364 with regard to a possible reprint to be carried out at a later stage under conditions different from those under which the first picture print has been made.

[0011] EP-A1 -0 727 693 discloses a method and a system in which both a plurality of picture prints and an index print are made, wherein one may assume that the index print comprises picture prints having a lower resolution than the plurality of "normal" picture prints.

[0012] EP-A-0 615 154 discloses a system in which full size picture image data are stored. There is provided a picture printer suitable for printing index prints. Also in that case, one may assume that the resolution of each of the index prints is lower than that of each full size picture print.

SUMMARY OF THE INVENTION

[0013] Based on consideration of the problems described above, an object of the present invention is to provide a method and a system for storing picture image data for a reprint, whereby a reprint can be generated from picture image data having been stored, without carrying out film rereading, even when a reprint under a different condition is requested.

[0014] A first method of the present invention for stor-

ing picture image data for a reprint comprises the features of claim 1.

[0015] The "image reading area including almost the entire area of the picture image" means either an area almost the same as the picture image or a larger area including the outside of the picture image. Therefore, the "picture image data representing a picture image" does not mean the data representing only the picture image, but the data representing at least the picture image, and sometimes including a portion outside the picture image.

[0016] "Generating a picture print by using the picture image data with a predetermined area of the picture image smaller than the image reading area having been read being as a print image area" means that an area larger than the area necessary for generating a print is read and the data thus obtained are stored for a reprint.

[0017] "The predetermined recording medium" means a disc of a server computer installed in a DPE or the like, or a medium to be provided to a customer, such as an MO disc.

[0018] A second method of the present invention for storing picture image data for a reprint comprises the steps of claim 2.

[0019] "Reading the picture image with an input density range including almost the entire density range of the picture image" means that reading is carried out in such a manner that a density curve of the picture image data versus the film density will not saturate and maintain a closely linear relationship within the density range of the picture image.

[0020] "Generating a picture print by using the picture image data with a print density range narrower than the input density range" means that even a portion of picture image data in such a density range where the density curve is saturated upon printing and a print will not be generated clearly are saved and stored for a reprint.

[0021] A third method of the present invention for storing picture image data for a reprint comprises the steps of claim 3.

[0022] To meet as wide a variety of requests for reprints as possible, the higher the "predetermined resolution" is at reading, the more preferable it is. Furthermore, as "at least one set of picture image data classified by resolutions", it is preferable that the picture image data are stored at resolutions frequently used for ordinary printing or display such as Base *8 or 4, while the resolution of reading is Base* 16.

[0023] A first system of the present invention for storing picture image data for a reprint comprises the features of claim 5.

[0024] It is needless to say that a combination of any two methods among the above three methods, or a combination of all three methods, is also possible.

[0025] According to the methods and the systems of the present invention for storing picture image data for a reprint, when film reading for generating a print is carried out, as much as possible of the information regard-

ing the content or the density of a picture image recorded on a film is stored as a portion of the picture image data as much, including the information which is not necessary for generating the print. Therefore, even when a reprint under a condition different from the previous condition is requested, the reprint can be generated by using the stored picture image data, without carrying out rereading of the film.

[0026] In this manner, not only does the operation efficiency upon reprinting obviously improve, but also deterioration of film quality due to repetitive reading can be avoided. Furthermore, if all information which can be obtained by film reading is stored at the time of the reading, a reprint under an arbitrary condition can be generated, even if the film is lost (or disposed of).

[0027] Moreover, if the print image area, the print density range, and the print resolution of the picture print which has been generated are stored as the tag information added to the image data, such tag information can be displayed, upon generating a reprint, on a monitor or the like as a frame or the like showing the print image area. Therefore, a variety of printing conditions can be adjusted by referring to such information.

25 BRIEF DESCRIPTION OF THE DRAWINGS

[0028]

Figure 1 is a diagram showing an outline of a first method of the present invention for storing picture image data for a reprint,

Figure 2 is a diagram showing an example of picture image data to be stored, and

Figure 3 is a diagram showing an outline of a second method of the present invention for storing picture image data for a reprint.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0029] Hereinafter, a method and a system of the present invention for storing picture image data for a reprint will be explained referring to the accompanying drawings. The present invention mainly relates to picture image data which are dealt with and stored by a photo finishing system. Basic functions of each means comprising the system, for example, in the case of a film scanner, the basic function whereby scanning is carried out after setting a reading condition which is determined by carrying out a pre-scan or the like at each frame upon necessity while a film is automatically being fed, may be the same as in a conventional photo finishing system. Therefore, detailed explanation and drawings regarding such basic functions are omitted in the following explanation.

[0030] Figure 1 shows an outline of a first method of the present invention for storing picture image data. As shown by Figure 1, in the method and the system of the

present invention, when a picture print of a picture image recorded on a film 1 is generated, an image area 2 of the picture image is detected by a predetermined image area detecting means, and reading of the film 1 is carried out with image area to be read being sufficiently larger than the detected image area 2, as shown by image reading area 4, for example. The obtained picture image data are then stored as picture image data for a reprint. It is preferable that the image reading area 4 is set to extend especially in the direction of film feeding to prevent a portion of the picture image 2 from becoming out of the image reading area due to errors in image area detection and film feeding. Moreover, print image area 3 is determined in response to the output from the image detecting means, and the image data within this area are printed by a picture printer.

[0031] The determined print image area 3 is added to the picture image data as tag information in the form of coordinates relative to the picture image 2 or the image reading area 4, and stored with the picture image data. In this manner, as shown in Figure 2 for example, it becomes possible to display a frame showing the print image area on a monitor by using the tag information, when the stored picture image data are displayed.

[0032] As shown in Figures 1 and 2 for example, when a portion of a figure at the end of a picture is not printed, print output is instructed after adjusting the print image area, referring to the frame on the monitor. The information regarding the area instructed on the monitor is transferred to the picture printer, and the picture printer carries out reprinting with the instructed area being the print image area. In other words, in a conventional method and system, the area of the image data to be stored is the same as the print image area 3, and the figure at the end of the picture will not be included in a print unless film rereading is carried out. However, in the present system, a reprint can be generated immediately after an adjustment on a monitor, and production efficiency will definitely improve.

[0033] More specifically, in the APS, image data used for a first print have 1890×1074 pixels for an H size print, while there are 1524×1074 pixels for a C size print which is shorter in the horizontal direction than the H size, and 1890×672 pixels for a P size print which is shorter in the vertical direction than the H size. A conventional method stores the same number of pixels. Meanwhile, the storing method of the present invention stores the number of pixels equivalent to that of an H size picture (1890×1074 pixels) for each size. Alternatively, an area slightly larger than the area represented by the above number of pixels is stored as the picture image data, based on consideration of an error in film feeding or the like. As a result, especially in a C size or a P size print, the area to be printed can be adjusted to a large extent on the monitor, and a reprint can be generated immediately.

[0034] A second method of the present invention for storing picture image data for a reprint will be explained

referring to Figure 3. Figure 3 is an example of a density histogram of a negative film on which a picture image is recorded. The extent of a histogram generally varies greatly depending on the content of a picture. However, if an appropriate range of y value upon printing and reproducing density range of a print material are considered, the density range which can be used for printing will be limited as shown by range 5 in Figure 3, for example.

[0035] In this case, it is possible that an area in shade becomes too dark in density range 6, or an area in bright light becomes too bright in density range 7. The allowance of these phenomena depends on the intention of the photographer, and even when an operator of a picture printer judges it to be allowable, the photographer may request a reprint. Therefore, the range 5 to be used for printing needs to be changed (translated parallel) in accordance with this request. In the present method, a larger range 8 is stored as the picture image data, in consideration of such a possible change in the print density range upon reprinting.

[0036] It is preferable for the tag information showing the density range used for a first print (for example, the lower limit and the upper limit of the density range) to be added to the picture image data and stored with the picture image data. When the picture image data are reprinted, the stored picture image data are displayed on a monitor, after tone correction which is the same as in the previous printing is carried out thereon using the tag information. An operator inputs density correction into the system while looking at the monitor, and the system displays the picture image data on the monitor after the tone correction processing has been carried out on the picture image data with the shifted density range in accordance with the density correction having been input. The picture image data are finally printed with the density range finally determined as the print density range by such an adjustment.

[0037] A third method of the present invention for storing the picture image data for a reprint reads image data at as high a resolution as possible, regardless of the resolution requested for first time printing, and the high resolution image data are stored so that picture quality deterioration due to an insufficient information amount will not occur, regardless of the resolution required upon reprinting. However, to generate low resolution image data from the high resolution image data, predetermined processing is necessary. Therefore, it is preferable that several sets of picture image data at several resolutions are generated in advance and stored. Among the picture image data whose resolution is higher than the requested resolution upon reprinting, the image data at the resolution closest to the requested one will be used for a reprint. In this manner, the time required for access to the picture image data, pixel number conversion processing, and the like, will be shortened.

[0038] It is preferable that picture image data display is carried out at the resolution in accordance with the

resolution of the monitor screen. Therefore, picture image data at the resolution of the monitor resolution may be stored separately. In the third storing method, if the resolution for the first time printing is also stored as the tag information with the image data and displayed on the monitor, the information can be referred to when the resolution for a reprint is determined.

[0039] Although the first, second and the third storing methods of the present invention have been respectively described above, it is preferable that these methods are used in combination as required.

Claims

- 1. A method for storing picture image data for a reprint comprising the steps of:

obtaining picture image data representing a picture image (2) recorded on a developed film (1) by reading an image reading area (4) including substantially the entire area of the picture image on the film (1); and

generating a first picture print from the picture image data with a predetermined area smaller than the image reading area (4) being specified as a print image area (3), while storing said picture image data in a predetermined recording medium as reprint data,

characterized in that tag information showing the print image area (3) is stored with the picture image data in the recording medium, and that a second picture print with a predetermined area different from the area of the first picture print without rereading the film is generated by using the stored picture image data.

- 2. A method for storing picture image data for a reprint comprising the steps of:

obtaining picture image data representing a picture image (2) recorded on a developed film (1) by reading the picture image on the film with an input density range including substantially the entire density range of the picture image; and

generating a first picture print from the picture image data with a predetermined density range narrower than the input density range being specified as a print density range, while storing the picture image data in a predetermined recording medium as reprint data, **characterized in that** tag information showing the print density range is stored with the picture image data in the recording medium, and that a second picture print with a predetermined print density range different from the density range of the

first picture, print is generated by using the stored picture image data without rereading the film.

- 3. A method for storing picture image data for a reprint comprising the steps of:

obtaining picture image data representing a picture image (2) recorded on a developed film (1) by reading the picture image on the film at a predetermined resolution; and generating first a picture print from the picture image data at a resolution lower than the predetermined resolution, while storing the picture image data in a predetermined recording medium as reprint data **characterised in that** tag information showing the resolution of the picture print is stored with the picture image data in the recording medium, and that a second picture print with a predetermined resolution different from that of the first print is generated by using the stored picture image data without rereading the film.

- 4. A method for storing picture image data for a reprint as defined in Claim 3 wherein at least one set of image data of the picture image classified by resolution lower than the predetermined resolution are stored with the picture image data in the recording medium.

- 5. A system for storing picture image data for a reprint, comprising:

image reading means which obtains picture image data representing a picture image (2) recorded on a developed film (1) by reading an image reading area (4) including substantially the entire area of the picture image (2) on the film (1);

a picture printer receiving the picture image data and generating a first picture print by using the picture image data with a predetermined area smaller than the image reading area (4) being specified as a print image area (3); control means ; and storing means storing the picture image data in a predetermined recording medium as reprint data, **characterized in that** the storing means stores tag information showing the print image area (3) with the image data in the recording medium, and that said control means is adapted to instruct the picture printer to reprint a second picture print having a predetermined area different from that of said first picture print without rereading the film by using the stored picture image data.

- 6. A system for storing picture image data for a reprint,

comprising:

image reading means which obtains picture image data representing a picture image (2) recorded on developed film (1) by reading the picture image on the film with an input density range including almost the entire density range of the picture image (2);

a picture printer receiving the picture image data and generating a first picture print with a predetermined density range narrower than the input density range being specified as a print density range; control means ; and

storing means storing the picture image data in a predetermined recording medium as reprint data, **characterized in that** the storing means stores tag information showing the print density range with the picture image data in the recording medium, and that said control means is adapted to instruct the picture printer to reprint a second picture print having a predetermined density range different from that of said first picture print without rereading the film by using the stored picture image data.

7. A system for storing picture image data for a reprint, comprising:

image reading means which obtains picture image data representing a picture image recorded on a developed film (1) by reading the picture image (2) on the film at a predetermined resolution;

a picture printer receiving the picture image data and generating a first picture print at a resolution lower than the predetermined resolution; control means ; and storing means storing the picture image data in a predetermined recording medium as reprint data, **characterized in that** the storing means stores tag information showing the resolution of the picture print with the image data in the recording medium, and that said control means is adapted to instruct the picture printer to reprint a second picture print having a predetermined resolution different from that of said first picture print without rereading the film by using the stored picture image data.

8. A system for storing picture image data for a reprint as defined in Claim 7 wherein at least one set of image data of the picture image (2) classified by resolution lower than the predetermined resolution are stored with the picture image data.

Patentansprüche

1. Verfahren zum Speichern von Bilddaten für einen Nachdruck, umfassend folgende Schritte:

Erfassen von Bilddaten, die ein Bild (2) repräsentieren, das auf einem entwickelten Film (1) aufgezeichnet ist, indem ein Bildlesebereich (4) gelesen wird, der im wesentlichen die gesamte Fläche des Bilds auf dem Film (1) enthält; und

Erzeugen eines ersten Bilddrucks aus den Bilddaten mit einer vorbestimmten Fläche, die kleiner ist als der Bildlesebereich (4), der als Druckbildbereich (3) spezifiziert wird, während die Bilddaten auf einem vorbestimmten Aufzeichnungsträger als Nachdruckdaten gespeichert werden, **dadurch gekennzeichnet, daß** Kennzeichnungsinformation, die den Druckbildbereich (3) darstellt, mit den Bilddaten in dem Aufzeichnungsträger gespeichert wird, und daß ein zweiter Bilddruck mit einer vorbestimmten Fläche, die verschieden ist von der Fläche des ersten Bilddrucks, ohne erneutes Lesen des Films unter Verwendung der gespeicherten Bilddaten erzeugt wird.

2. Verfahren zum Speichern von Bilddaten für einen Nachdruck, umfassend folgende Schritte:

Erfassen von Bilddaten, die ein auf einem entwickelten Film (1) aufgezeichnetes Bild (2) repräsentieren, indem das Bild auf dem Film mit einem Eingangsdichtebereich gelesen wird, der im wesentlichen den gesamten Dichtebereich des Bilds enthält; und

Erzeugen eines ersten Bilddrucks aus den Bilddaten mit einem vorbestimmten Dichtebereich, der enger ist als der Eingangsdichtebereich, welcher als Druckdichtebereich spezifiziert ist, während die Bilddaten auf einem vorbestimmten Aufzeichnungsträger als Nachdruckdaten gespeichert werden, **dadurch gekennzeichnet, daß** Kennzeichnungsinformation, die den Druckdichtebereich darstellt, mit den Bilddaten in dem Aufzeichnungsträger gespeichert wird, und daß ein zweiter Bilddruck mit einem vorbestimmten Druckdichtebereich, der verschieden ist von dem Dichtebereich des ersten Bilddrucks, unter Verwendung der gespeicherten Bilddaten ohne erneutes Lesen des Films erzeugt wird.

3. Verfahren zum Speichern von Bilddaten für einen Nachdruck, umfassend folgende Schritte:

Erfassen von Bilddaten, die ein auf einem ent-

wickelten Film (1) aufgezeichnetes Bild (2) repräsentieren, in dem das Bild auf dem Film mit einer vorbestimmten Auflösung gelesen wird; und

Erzeugen eines ersten Bilddrucks aus den Bilddaten mit einer Auflösung, die geringer als eine vorbestimmte Auflösung ist, während die Bilddaten auf einem vorbestimmten Aufzeichnungsträger als Nachdruckdaten gespeichert werden, **dadurch gekennzeichnet, daß** Kennzeichnungsinformation über die Auflösung des Bilddrucks mit den Bilddaten auf dem Aufzeichnungsträger gespeichert wird, und daß ein zweiter Bilddruck mit einer vorbestimmten Auflösung, die verschieden ist von derjenigen des ersten Drucks, unter Verwendung der gespeicherten Bilddaten ohne erneutes Lesen des Films erzeugt wird.

4. Verfahren nach Anspruch 3, bei dem mindestens ein Satz von Bilddaten des Bilds, klassifiziert nach Auflösung, die geringer ist als die vorbestimmte Auflösung, mit den Bilddaten auf dem Aufzeichnungsträger gespeichert wird.

5. System zum Speichern von Bilddaten für einen Nachdruck, umfassend:

eine Bildleseeinrichtung, die Bilddaten erfaßt, welche ein auf einem entwickelten Film (1) aufgezeichnetes Bild (2) repräsentieren, indem ein Bildlesebereich (4) gelesen wird, welcher im wesentlichen die gesamte Fläche des Bilds (2) auf dem Film (1) enthält;

einen Bilddrucker, der die Bilddaten empfängt und einen ersten Bilddruck unter Verwendung der Bilddaten mit einer vorbestimmten Fläche erzeugt, die kleiner ist als der Bildlesebereich (4) und als Druckbildbereich (3) spezifiziert ist;

eine Steuereinrichtung;

und eine Speichereinrichtung zum Speichern der Bilddaten auf einem vorbestimmten Aufzeichnungsträger als Nachdruckdaten, **dadurch gekennzeichnet, daß** die Speichereinrichtung Kennzeichnungsinformation, die die Druckbildfläche (3) zeigt, mit den Bilddaten auf dem Aufzeichnungsträger speichert, und daß die Steuereinrichtung dazu ausgebildet ist, den Bilddrucker anzuweisen, einen zweiten Bilddruck nachzudrucken, der eine vorbestimmte Fläche aufweist, die verschieden ist von derjenigen des ersten Bilddrucks, ohne den Film erneut zu lesen, indem die gespeicherten Bilddaten verwendet werden.

6. System zum Speichern von Bilddaten für einen Nachdruck, umfassend:

eine Bildleseeinrichtung, die auf einem entwickelten Film (1) aufgezeichnete Bilddaten eines Bildes (2) erfaßt, indem sie das Bild auf dem Film mit einem Eingangsdichtebereich liest, der nahezu den gesamten Dichtebereich des Bilds (2) umfaßt;

einen Bilddrucker, der die Bilddaten empfängt und einen ersten Bilddruck mit einem vorbestimmten Dichtebereich, der geringer ist als der Eingangsdichtebereich, welcher als Druckdichtebereich spezifiziert ist, generiert;

eine Steuereinrichtung; und

eine Speichereinrichtung zum Speichern der Bilddaten auf einem vorbestimmten Aufzeichnungsträger als Nachdruckdaten, **dadurch gekennzeichnet, daß** die Speichereinrichtung Kennzeichnungsinformation über den Druckdichtebereich zusammen mit den Bilddaten auf dem Aufzeichnungsträger speichert, und daß die Steuereinrichtung dazu ausgebildet ist, den Bilddrucker anzuweisen, einen zweiten Bilddruck mit einem vorbestimmten Dichtebereich zu drucken, der verschieden ist von demjenigen des ersten Bilddrucks, ohne den Film erneut zu lesen, indem die gespeicherten Bilddaten verwendet werden.

7. System zum Speichern von Bilddaten für einen Nachdruck, umfassend:

eine Bildleseeinrichtung, die Bildelementdaten über ein auf einem entwickelten Film (1) aufgezeichnetes Bild erfaßt, in dem das Bild (2) auf dem Film mit einer vorbestimmten Auflösung gelesen wird;

einen Bilddrucker, der die Bilddaten empfängt und einen ersten Bilddruck mit einer Auflösung erzeugt, die geringer ist als die vorbestimmte Auflösung;

eine Steuereinrichtung; und

eine Speichereinrichtung, die die Bilddaten auf einem vorbestimmten Aufzeichnungsträger als Nachdruckdaten speichert, **dadurch gekennzeichnet, daß** die Speichereinrichtung Kennzeichnungsinformation über die Auflösung des Bilddrucks zusammen mit den Bilddaten auf dem Aufzeichnungsträger speichert, und daß die Steuereinrichtung dazu ausgebildet ist, den Bilddrucker anzuweisen, einen zweiten Bild-

druck mit einer vorbestimmten Auflösung nachzudrucken, die verschieden ist von derjenigen des ersten Bilddrucks, ohne den Film erneut zu lesen, indem die gespeicherten Bilddaten verwendet werden.

8. System nach Anspruch 7, bei dem mindestens ein Satz von Bilddaten des Bilds (2), klassifiziert durch eine Auflösung, die geringer ist als die vorbestimmte Auflösung, zusammen mit den Bilddaten gespeichert wird.

Revendications

1. Procédé destiné à stocker des données d'images pour une réimpression comprenant les étapes consistant à :

obtenir des données d'images représentant une image (2) enregistrée sur un film développé (1) en lisant une zone de lecture d'images (4) comprenant sensiblement toute la zone de l'image sur le film (1) ; et

générer une première impression d'image à partir des données d'images avec une zone prédéterminée, inférieure à la zone de lecture d'images (4), spécifiée comme zone d'image d'impression (3), tout en stockant lesdites données d'images sur un support d'enregistrement prédéterminé comme données de réimpression, **caractérisé en ce que** des informations de balise illustrant la zone d'image d'impression (3) sont stockées avec les données d'images sur le support d'enregistrement, et **en ce qu'**une seconde impression d'image avec une zone prédéterminée différente de la zone de la première impression d'image, sans relire le film, est générée en utilisant les données d'images stockées.

2. Procédé destiné à stocker des données d'images pour une réimpression comprenant les étapes consistant à :

obtenir des données d'images représentant une image (2) enregistrée sur un film développé (1) en lisant l'image sur le film avec une plage de densité d'entrée comprenant sensiblement toute la plage de densité de l'image ; et

générer une première impression d'image à partir des données d'images avec une plage de densité prédéterminée, plus étroite que la plage de densité d'entrée, spécifiée comme plage de densité d'impression, tout en stockant les données d'images sur un support d'enregistrement prédéterminé comme données de réimpression, **caractérisé en ce que** des informa-

tions de balise illustrant la plage de densité d'impression sont stockées avec les données d'images sur le support d'enregistrement, et **en ce qu'**une seconde impression d'image avec une plage de densité d'impression prédéterminée différente de la plage de densité de la première impression d'image est générée en utilisant les données d'images stockées sans relire le film.

3. Procédé destiné à stocker des données d'images pour une réimpression comprenant les étapes consistant à :

obtenir des données d'images représentant une image (2) enregistrée sur un film développé (1) en lisant l'image sur le film à une résolution prédéterminée ; et

générer une première impression d'image à partir des données d'images à une résolution inférieure à la résolution prédéterminée, tout en stockant les données d'images sur un support d'enregistrement prédéterminé comme données de réimpression, **caractérisé en ce que** des informations de balise illustrant la résolution de l'impression d'image sont stockées avec les données d'images sur le support d'enregistrement, et **en ce qu'**une seconde impression d'image avec une résolution prédéterminée différente de celle de la première impression est générée en utilisant les données d'images stockées sans relire le film.

4. Procédé destiné à stocker des données d'images pour une réimpression selon la revendication 3, dans lequel au moins un ensemble de données d'images de l'image classées par résolution inférieure à la résolution prédéterminée sont stockées avec les données d'images sur le support d'enregistrement.

5. Système destiné à stocker des données d'images pour une réimpression, comprenant :

des moyens de lecture d'images qui obtiennent des données d'images représentant une image (2) enregistrée sur un film développé (1) en lisant une zone de lecture d'images (4) comprenant sensiblement toute la zone de l'image (2) sur le film (1) ;

une imprimante d'images recevant les données d'images et générant une première impression d'image en utilisant les données d'images avec une zone prédéterminée, inférieure à la zone de lecture d'images (4), spécifiée comme zone d'image d'impression (3) ;

des moyens de commande ; et

des moyens de stockage stockant les données

d'images sur un support d'enregistrement prédéterminé comme données de réimpression, **caractérisé en ce que** les moyens de stockage stockent des informations de balise illustrant la zone d'image d'impression (3) avec les données d'images sur le support d'enregistrement, et **en ce que** lesdits moyens de commande sont adaptés pour donner à l'imprimante d'images l'ordre de réimprimer une seconde impression d'image ayant une zone prédéterminée différente de celle de ladite première impression d'image sans relire le film en utilisant les données d'images stockées.

6. Système destiné à stocker des données d'images pour une réimpression, comprenant :

des moyens de lecture d'images qui obtiennent des données d'images représentant une image (2) enregistrée sur un film développé (1) en lisant l'image sur le film avec une plage de densité d'entrée comprenant presque toute la plage de densité de l'image (2) ;
 une imprimante d'images recevant les données d'images et générant une première impression d'image avec une plage de densité prédéterminée, plus étroite que la plage de densité d'entrée, spécifiée comme plage de densité d'impression ;
 des moyens de commande ; et
 des moyens de stockage stockant les données d'images sur un support d'enregistrement prédéterminé comme données de réimpression, **caractérisé en ce que** les moyens de stockage stockent des informations de balise illustrant la plage de densité d'impression avec les données d'images sur le support d'enregistrement, et **en ce que** lesdits moyens de commande sont adaptés pour donner à l'imprimante d'images l'ordre de réimprimer une seconde impression d'image ayant une plage de densité prédéterminée différente de celle de ladite première impression d'image sans relire le film en utilisant les données d'images stockées.

7. Système destiné à stocker des données d'images pour une réimpression, comprenant :

des moyens de lecture d'images qui obtiennent des données d'images représentant une image enregistrée sur un film développé (1) en lisant l'image (2) sur le film à une résolution prédéterminée ;
 une imprimante d'images recevant les données d'images et générant une première impression d'image à une résolution inférieure à la résolution prédéterminée ;
 des moyens de commande ; et

des moyens de stockage stockant les données d'images sur un support d'enregistrement prédéterminé comme données de réimpression, **caractérisé en ce que** les moyens de stockage stockent des informations de balise illustrant la résolution de l'impression d'image avec les données d'images sur le support d'enregistrement, et **en ce que** lesdits moyens de commande sont adaptés pour donner à l'imprimante d'images l'ordre de réimprimer une seconde impression d'image ayant une résolution prédéterminée différente de celle de ladite première impression d'image sans relire le film en utilisant les données d'images stockées.

8. Système destiné à stocker des données d'images pour une réimpression selon la revendication 7, dans lequel au moins un ensemble de données d'images de l'image (2) classées par résolution inférieure à la résolution prédéterminée sont stockées avec les données d'images.

FIG. 1

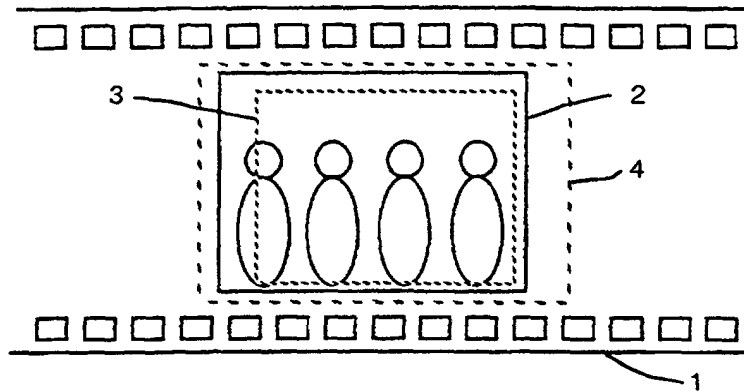


FIG. 2

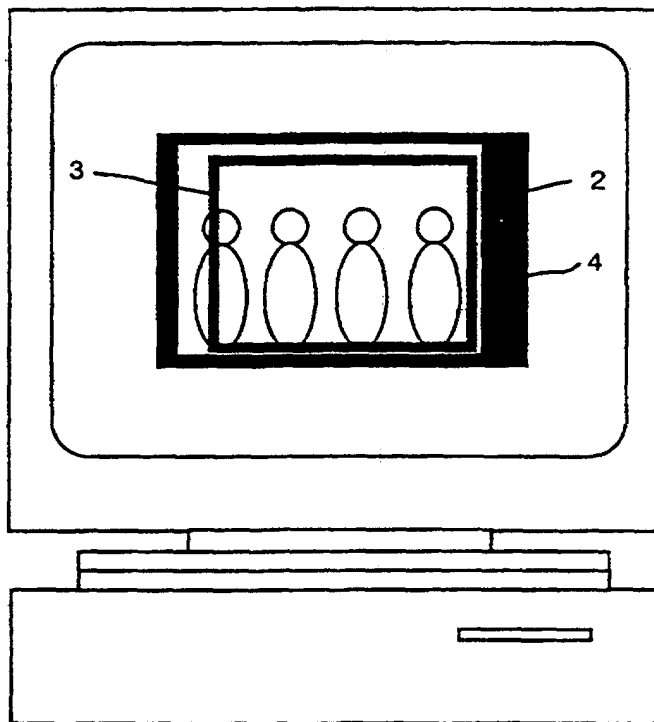


FIG.3

